Release Notes for Cisco 1400 Series Routers for Cisco IOS Release 12.1 T

February 22, 2001

> **Note** You can find the most current Cisco IOS documentation on Cisco.com. These electronic documents may contain updates and modifications made after the hardcopy documents were printed.

These release notes for the Cisco 1400 series routers describe the enhancements provided in Cisco IOS Release 12.1 T. These release notes are updated as needed.

For a list of the software caveats that apply to Cisco IOS Release 12.1 T, see *Caveats for Cisco IOS Release 12.1 T* that accompanies these release notes. The caveats document is updated for every maintenance release and is located on Cisco.com and the Documentation CD-ROM.

Use these release notes with *Cross-Platform Release Notes for Cisco IOS Release 12.1* on Cisco.com and the Documentation CD-ROM.

Contents

These release notes describe the following topics:

CISCO SYSTEMS

78-10840-04 Rev D0

Early Deployment Releases

These release notes describe the Cisco 1400 series routers for Cisco IOS Release 12.1 T, which is an early deployment (ED) release based on Cisco IOS Release 12.1. Early deployment releases contain fixes for software caveats and support for new Cisco hardware and software features.

The following list shows the recent early deployment releases of the Cisco 1401 router:

- Release 12.0(1)XA
- Release 12.0(2)T to 12.0(7)T
- Release 12.1 T, up to 12.1(5)T

The following list shows the recent early deployment releases of the Cisco 1417 router:

- Release 12.0(4)XI
- Release 12.0(5)T to 12.0(7)T
- Release 12.1 T, up to 12.1(5)T

For more information, see the "Platform-Specific Documents" section on page 12 about accessing related release note documents.

System Requirements

This section describes the system requirements for Cisco IOS Release 12.1 T:

- Memory Requirements, page 2
- Hardware Supported, page 3
- Determining the Software Release, page 3
- Upgrading to a New Software Release, page 3
- Feature Set Tables, page 3

Memory Requirements

Table 1   Memory Requirements for the Cisco 1400 Series

Feature Set	Software Image	Recommended Flash Memory	Recommended DRAM Memory	Runs from
IP/IPX	c1400-ny-mz	4 MB	16 MB	RAM
IP/IPX Plus	c1400-nsy-mz	6 MB	16 MB	RAM
IP/IPX/FW Plus	c1400-nosy-mz	6 MB	24 MB	RAM
IP/FW Plus IPSec 56	c1400-osy56i-mz	6 MB	24 MB	RAM

Hardware Supported

Cisco IOS Release 12.1 T supports the Cisco 1400 series routers:

- Cisco 1401
- Cisco 1417

For detailed descriptions of the new hardware features, see "New and Changed Information" section on page 5.

Following are some of the key features of the Cisco 1400 series:

- ATM-25 port (Cisco 1401 router)—For connecting through a DSL modem over an ADSL line to a central service provider.
- ADSL port (Cisco 1417 router)—For connecting directly over an ADSL line to a central service provider.
- Console port—For connecting a terminal or PC to configure and manage the router. Supports up to 9600 bps (up to 115.2 kbps for software download).
- Supports IP, IPX, PPP over ATM, and firewall security.
- Supports ATM features such as ATM Adaption Layer 5, ATM PVCs, and RFC 1483.
- Supports SNMP for management over an SNMP network.
- Supports Cisco ATM Management Information Base (MIB).

Determining the Software Release

To determine the version of Cisco IOS software running on your Cisco 1400 series router, log in to the router and enter the **show version** EXEC command:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) 12.1 T Software (C1400-NY-MZ), Version 12.1(5)T, RELEASE SOFTWARE
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, see *Cisco IOS Upgrade Ordering Instructions* located at:

http://www.cisco.com/warp/public/cc/cisco/mkt/ios/prodlit/957_pp.htm

Feature Set Tables

The Cisco IOS software is packaged in feature sets consisting of software images—depending on the platform. Each feature set contains a specific set of Cisco IOS features.

Cisco IOS Release 12.1 T supports the same feature sets as Cisco IOS Release 12.1, but Release 12.1 T can include new features supported by the Cisco 1400 series routers.

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Caution   Cisco IOS images with strong encryption (including, but not limited to 168-bit (3DES) data encryption feature sets) are subject to United States government export controls and have limited distribution. Strong encryption images to be installed outside the United States are likely to require an export license. Customer orders may be denied or subject to delay due to United States government regulations. When applicable, the purchaser/user must obtain local import and use authorizations for all encryption strengths. Please contact your sales representative or distributor for more information, or send an e-mail to export@cisco.com.

Table 2 lists the features and feature sets supported by the Cisco 1400 series routers in Cisco IOS Release 12.1 T and uses the following conventions:

- Yes—The feature is supported in the software image.

- No—The feature is not supported in the software image.

- In—The number in the "In" column indicates the Cisco IOS release in which the feature was introduced. For example, (2) means a feature was introduced in 12.1(2)T. If a cell in this column is empty, the feature was included in the initial base release.

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Note   This feature set table contains only the features specific to the T-train. For a more complete list of features, see the feature set tables in the mainline release notes on Cisco.com: http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121relnt/xprn121/121 feats.htm.

Table 2   Feature List by Feature Set for the Cisco 1400 Series

Features	In	Feature Set			
		IP/IPX	IP/IPX Plus	IP/IPX/FW Plus	IP/FW Plus IPSec 56
IP Routing Protocols					
OSPF Flooding Reduction	(2)	Yes	Yes	Yes	Yes
Management					
Service Assurance Agent Enhancements		Yes	Yes	Yes	Yes
Miscellaneous					
AutoInstall Using DHCP for LAN Interfaces	(5)	Yes	Yes	Yes	Yes
Closed User Group Selection Facility Suppress Option	(5)	Yes	Yes	Yes	Yes
NAT - Support for NetMeeting Directory (Internet Locator Service - ILS)	(5)	Yes	Yes	Yes	Yes
NAT - Support of IP Phone to Cisco Call Manager	(5)	Yes	Yes	Yes	Yes
NTP MIB	(5)	Yes	Yes	Yes	Yes
Parser Cache	(5)	Yes	Yes	Yes	Yes

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco 1400 series routers for Release 12.1 T.

New Software Features in Cisco IOS Release 12.1(5)T

The following new software features are supported by the Cisco 1400 series routers for Release 12.1(5)T:

AutoInstall Using DHCP for LAN Interfaces

The AutoInstall Using DHCP for LAN Interfaces feature replaces the use of the Bootstrap Protocol (BOOTP) with the use of the Dynamic Host Configuration Protocol (DHCP) for Cisco IOS AutoInstall over LAN interfaces. AutoInstall is a Cisco IOS software feature which provides for the configuration of a new routing device automatically when the device is initialized. DHCP (defined in RFC 2131) is based on the Bootstrap Protocol, which provides the framework for passing configuration information to hosts on a TCP/IP network. DHCP adds the capability of automatic allocation of reusable network addresses and additional configuration options. In Cisco IOS release 12.1(5)T, the IP address procurement phase of the AutoInstall process is now accomplished using DHCP for Ethernet, Token Ring, and FDDI interfaces. Prior to this release, IP addresses for LAN interfaces were obtained using BOOTP during the AutoInstall process. The AutoInstall Using DHCP for LAN Interfaces feature also allows the routing device to recognize IP address allocation messages coming from regular BOOTP servers, providing a seamless transition for those devices already using BOOTP servers for AutoInstall. Additionally, this feature allows for the uploading of configuration files using unicast TFTP. For further details, please see the following document:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121newft/121t/121t5/dt_dhcpa.htm

Closed User Group Selection Facility Suppress Option

A closed user group (CUG) selection facility is a specific encoding element that allows a destination data terminal equipment (DTE) to identify the CUG to which the source and destination DTEs belong. The Closed User Group Selection Facility Suppress Option feature enables a user to configure an X.25 data communications equipment (DCE) interface or X.25 profile with a DCE station type to remove the CUG selection facility from incoming call packets destined for the preferential CUG only or for all CUGs. You can also remove the selection facility from a CUG with outgoing access (CUG/OA).

NAT - Support for NetMeeting Directory (Internet Locator Service - ILS)

Microsoft NetMeeting is a Windows-based application that enables multi-user interaction and collaboration from a users PC over the Internet or an intranet. Support for the NetMeeting Directory (ILS) allows connections by name from the directory built into the NetMeeting application. Destination IP addresses do not need to be known in order for a connection to be made.

NAT - Support of IP Phone to Cisco Call Manager

Cisco IP Phones use the Selsius Skinny Station Protocol to connect with and register to the Cisco Call Manager (CCM). Messages flow back and forth that include IP address and Port information which is used to identify other IP Phone users with which a call can be placed.

To be able to deploy Cisco IOS Network Address Translation (NAT) between the IP Phone and CCM in a scalable environment, NAT needs to be able to detect the Selsius Skinny Station Protocol and understand the information passed within the messages.

When an IP Phone attempts to connect to the CCM and it matches the configured NAT translation rules, NAT will translate the original source IP address and replace it with one from the configured pool. This new address is what will be reflected in the CCM and be visible to other IP Phone users.

NTP MIB

The Network Time Protocol (NTP) is used to synchronize timekeeping among a set of distributed time servers and clients. The Cisco NTP MIB enables users to remotely monitor an NTP server using the Simple Network Management Protocol (SNMP), provided the MIB itself is implemented on that server. Use of the NTP MIB to monitor the NTP status of routing devices is accomplished using software on a Network Management System (NMS). There are no new or modified Cisco IOS software commands associated with this feature.

The Cisco implementation of the NTP MIB is based on NTP version 3 (RFC-1305). The MIB objects are all read-only. SNMP requests are processed by reading the corresponding variables from the NTP subsystem and returning them in the response. The NTP MIB defines a set of NTP server system objects, including an NTP server peers table and an NTP server filter register table. For complete details on the Cisco implementation of the NTP MIB, see the MIB file itself ("CISCO-NTP-MIB.my", available through Cisco.com at http://www.cisco.com/public/mibs/v2/).

Parser Cache

The Parser Cache feature optimizes the parsing (translation) of Cisco IOS software configuration command lines by remembering how to parse recently encountered command lines. This feature was developed to improve the the scalability of the Cisco IOS software command-line interface (CLI) parser when processing large configuration files. This improvement is especially useful for those cases in which thousands of virtual circuits must be configured for interfaces, or hundreds of access lists (ACLs) are required. The parser chain cache can rapidly recognize and translate configuation lines which differ slightly from previously used configuration lines (for example, pvc 0/100, pvc 0/101, and so on). Testing indicates an improvement to load time of between 30% and 36% for large configuration files when using the parser cache.

The parser cache is enabled by default on all platforms using Cisco IOS 12.1(5)T or later. A new command, **[no] parser cache**, allows the disabling or re-enabling of this feature.

No New Software Features in Cisco IOS Release 12.1(3)T

There are no new software feature supported by the Cisco 1400 series routers for Release 12.1(3)T.

New Software Features in Cisco IOS Release 12.1(2)T

The following new software feature is supported by the Cisco 1400 series routers for Release 12.1(2)T:

Point-to-Point Protocol (PPP) over ATM Using Dialer Interfaces

Cisco IOS release 12.1(2)T supports Point-to-Point Protocol (PPP) over ATM using dialer interfaces. This feature points static routes to a negotiated IP address.

You cannot point static routes to a negotiated IP address by cloning from virtual templates because you cannot point a static route to a virtual template or a virtual access interface. A virtual template only stores configuration commands and a virtual access is created and destroyed interface by cloning from dialer interfaces. You can therefore point static routes at this dialer interface.

This feature is related to caveat CSCdp19686.

OSPF Flooding Reduction

The explosive growth of the Internet has placed the focus on the scalability of Interior Gateway Protocols such as OSPF. The networks using OSPF are becoming larger every day and will continue to expand to accommodate the demand to connect to the Internet.

Internet Service Providers and customers with large networks have regularly complained that OSPF has a traffic overhead, even when the network topology is stable.

By design, OSPF requires link-state advertisements (LSAs) to be refreshed as they expire after 3600 seconds. Some implementations have tried to improve the flooding by reducing the frequency to refresh from 30 minutes to around 50 minutes or so.

This solution reduces the amount of refresh traffic but requires at least one refresh before the LSA expires. The OSPF Flooding Reduction feature works by reducing unnecessary refreshing and flooding of already known and unchanged information. To achieve this reduction, the LSAs are now flooded with the higher bit set, thus making them DoNotAge (DNA) LSAs.

New Software Features in Cisco IOS Release 12.1(1)T

The following new software feature is supported by the Cisco 1400 series routers for Release 12.1(1)T:

Service Assurance Agent Enhancements

The Service Assurance (SA) Agent is both an enhancement to and a new name for the Response Time Reporter (RTR) feature that was introduced in Cisco IOS Release 11.2. The feature allows you to monitor network performance between a Cisco router and a remote device (which can be another Cisco router, an IP host, or a mainframe host) by measuring key Service Level Agreement (SLA) metrics such as response time, network resources, availability, jitter, connect time, packet loss and application performance.This feature enables you to perform troubleshooting, problem analysis, and notifications based on the statistics collected by the SA Agent.

The SA Agent Enhancements feature introduces new performance measurement operations and enhancements to assist in the measurement of SLAs. With Cisco IOS Release 12.1(1)T, the SA Agent provides new capabilities that enable you to do the following:

- Measure FTP file download response time using the new FTP operation.

- Monitor one-way latency reporting through enhancements to the Jitter operation.

- Configure a new option for the DHCP operation.

- Manually enable a responder port.

- Verify data for the UDPEcho operation.

- Configure new options for the **rtr schedule** command.

- Restart an operation.

Limitations and Restrictions

MIBs

Old Cisco Management Information Bases (MIBs) will be replaced in a future release. Currently, OLD-CISCO-* MIBs are being converted into more scalable MIBs—without affecting existing Cisco IOS products or NMS applications. You can update from deprecated MIBs to the replacement MIBs as shown in Table 3.

Table 3   Deprecated and Replacement MIBs

Deprecated MIB	Replacement
OLD-CISCO-APPLETALK-MIB	RFC1243-MIB
OLD-CISCO-CHASSIS-MIB	ENTITY-MIB
OLD-CISCO-CPUK-MIB	To be decided
OLD-CISCO-DECNET-MIB	To be decided
OLD-CISCO-ENV-MIB	CISCO-ENVMON-MIB
OLD-CISCO-FLASH-MIB	CISCO-FLASH-MIB
OLD-CISCO-INTERFACES-MIB	IF-MIB CISCO-QUEUE-MIB
OLD-CISCO-IP-MIB	To be decided
OLD-CISCO-MEMORY-MIB	CISCO-MEMORY-POOL-MIB
OLD-CISCO-NOVELL-MIB	NOVELL-IPX-MIB
OLD-CISCO-SYS-MIB	(Compilation of other OLD* MIBs)
OLD-CISCO-SYSTEM-MIB	CISCO-CONFIG-COPY-MIB
OLD-CISCO-TCP-MIB	CISCO-TCP-MIB
OLD-CISCO-TS-MIB	To be decided
OLD-CISCO-VINES-MIB	CISCO-VINES-MIB
OLD-CISCO-XNS-MIB	To be decided

Note *Cisco Management Information Base (MIB) User Quick Reference* is no longer published. If you have an account with Cisco.com, you can find the current list of MIBs supported by Cisco. To reach the *Cisco Network Management Toolkit,* go to Cisco.com, press **Login**, and click to **Software Center: Network Mgmt Products: Cisco Network Management Toolkit: Cisco MIB**.

Important Notes

The following sections contain important notes about Cisco IOS Release 12.1 T that can apply to the Cisco 1400 series routers.

Last Maintenance Release of Cisco IOS Release 12.1 T

The last maintenance release of the 12.1 T release train is 12.1(5)T. The migration path for customers who need bug fixes for the 12.1 T features is the 12.2 mainline release. The 12.2 mainline release has the complete feature content of 12.1 T and will eventually reach general deployment (GD).

The last maintenance release was renamed from 12.1(4)T to 12.1(5)T to synchronize with its parent software base, the 12.1(5) mainline release, and to reflect that 12.1(5)T has all the bug fixes of the 12.1(5) mainline release. The 12.1 T release train is a superset of the 12.1 mainline release; hence any defect fixed in the 12.1 mainline is also fixed in 12.1 T. The set of features for 12.1(4)T is the same as that for 12.1(5)T. There was no change in the feature content of the release. The release was renamed so that the releases would be consistent with the Cisco release process.

Caveat CSCdr91706 and IOS HTTP Vulnerability

A defect in multiple releases of Cisco IOS software will cause a Cisco router or switch to halt and reload if the IOS HTTP service is enabled, browsing to http://router-ip/anytext?/ is attempted, and the enable password is supplied when requested. This defect can be exploited to produce a denial of service (DoS) attack.

The vulnerability, identified as Cisco bug ID CSCdr91706, affects virtually all mainstream Cisco routers and switches running Cisco IOS software releases 12.0 through 12.1, inclusive. This is not the same defect as CSCdr36952.

The vulnerability has been corrected and Cisco is making fixed releases available for free to replace all affected IOS releases. Customers are urged to upgrade to releases that are not vulnerable to this defect as shown in detail below.

This vulnerability can only be exploited if the enable password is known or not set.

You are strongly encouraged to read the complete advisory, which is available at http://www.cisco.com/warp/public/707/ioshttpserverquery-pub.shtml .

Flash defaults to Flash:1 on Multipartition Flash

When using a multipartition flash memory card, the various flash partitions are referred to as "flash:1:", "flash:2:", etc. If you specify only "flash" in a multipartition flash, the parser assumes "flash:1:." For example, if you enter **show flash all** the parser defaults to "show flash:1: all" and only the flash

information for the first partition displays. To see information for all flash memory partitions, enter **show flash ?**. This will list all of the valid partitions. Then enter **show flash:xx: all** on each valid partition.

Traffic Shaping

On the ATM25 interface of the Cisco 1400 series there are two types of traffic shaping: hardware-based and software-based. Hardware-based traffic shaping is provided by the ATM SAR chip and is enabled on a per-pvc basis by one of the following IOS PVC configuration commands:

```
ubr    <peak-cell-rate>
ubr+   <peak-cell-rate> <minimum-guaranteed-cell-rate>
vbr-nrt <peak-cell-rate> <sustainable-cell-rate> <maximum-burst-size>
```

The SAR chip has "rate counters" that control the rate at which the current buffer up for segmentation is going to be transmitted. Ideally, the SAR chip could be programmed with values for all of the above command parameters. Unfortunately, it only has the rate counters, which specify a divisor of the basic line rate of 25 Mbps and which really sets the maximum transmission rate (peak-cell-rate) for the channel. Note that with the **ubr** and **ubr**+ commands, the rate counter for the PVC is obtained from the <peak-cell-rate> parameter. With the **vbr-nrt** command, the rate counter is obtained from the <sustainable-cell-rate> parameter. While the <minimum-guaranteed-cell-rate> parameter in the **ubr**+ command and the <peak-cell-rate> parameter in the **vbr-nrt** command can be specified by the user, they are ignored by the ATM25 driver.

Software-based traffic shaping is enabled on a per-interface basis via the **traffic-shape** interface configuration command. For performance reasons, and since for ATM interfaces you most likely want to do shaping on a per-pvc basis, the ATM driver does not support software-based traffic shaping while fastswitching. However, if fast-switching is disabled and the **traffic-shape** interface configuration command is enabled, then software traffic shaping will occur. (See CSCdk28377 for more information.)

Caveats

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious. Severity 3 caveats are moderate caveats, and only select severity 3 caveats are included in the caveats document.

For information on caveats in Cisco IOS Release 12.1 T, see *Caveats for Cisco IOS Release 12.1 T*.

All caveats in Cisco IOS Release 12.1 are also in Cisco IOS Release 12.1 T.

For information on caveats in Cisco IOS Release 12.0, see *Caveats for Cisco IOS Release 12.1*, which lists severity 1 and 2 caveats and is located on Cisco.com and the Documentation CD-ROM.

Note If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, go to Cisco.com and press **Login.** Then go to **Software Center: Cisco IOS Software: Cisco Bugtool Navigator II**. Another option is to go to http://www.cisco.com/support/bugtools.

Related Documentation

The following sections describe the documentation available for the Cisco 1400 series routers. These documents consist of hardware and software installation guides, Cisco IOS configuration and command references, system error messages, feature modules, and other documents.

Documentation is available as printed manuals or electronic documents, except for feature modules, which are available online at Cisco.com and the Documentation CD-ROM.

Use these release notes with these documents:

- Release-Specific Documents, page 11
- Platform-Specific Documents, page 12
- Feature Modules, page 12
- Cisco IOS Software Documentation Set, page 12

Release-Specific Documents

The following documents are specific to Cisco IOS Release 12.1 and are located on Cisco.com and the Documentation CD-ROM:

- *Cross-Platform Release Notes for Cisco IOS Release 12.1*

  On Cisco.com at:

  Technical Documents: **Documentation Home Page**: **Cisco IOS Software Configuration**: **Cisco IOS Release 12.1**

  On the Documentation CD-ROM at:

  Cisco Product Documentation: Cisco IOS Software Configuration: **Cisco IOS Release 12.1: Release Notes**: **Cross-Platform Release Notes**

- Product bulletins, field notices, and other release-specific documents on Cisco.com at:

  Technical Documents

- *Caveats for Cisco IOS Release 12.1*

  See *Caveats for Cisco IOS Release 12.1* and *Caveats for Cisco IOS Release 12.1 T*, which contain caveats applicable to all platforms for all maintenance releases of Cisco IOS Release 12.1 and Release 12.1 T.

  On Cisco.com at:

  Technical Documents: Documentation Home Page: **Cisco IOS Software Configuration**: **Cisco IOS Release 12.1**: **Caveats**

  On the Documentation CD-ROM at:

  Cisco Product Documentation: Cisco IOS Software Configuration: **Cisco IOS Release 12.1**: **Caveats**

  > **Note** If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, go to Cisco.com and press **Login**. Then go to **Software Center: Cisco IOS Software: Cisco Bugtool Navigator II**. Another option is to go to http://www.cisco.com/support/bugtools.

Platform-Specific Documents

These individual and groups of documents are available for the Cisco 1400 series routers on Cisco.com and the Documentation CD-ROM:

- *Installing Your Cisco 1401 Router*
- *Installing Your Cisco 1417 Router*
- *Cisco 1400 Series Router Installation and Configuration Guide*
- *Regulatory Compliance and Safety Information*
- *Upgrading DRAM SIMMs in Cisco 1400 Series Routers*
- Release notes for Cisco 1400 series routers

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco Product Documentation: DSL Products: Cisco 1400 Series Routers

On the Documentation CD-ROM at:

Cisco Product Documentation: DSL Products: Cisco 1400 Series Routers

Feature Modules

Feature modules describe new features supported by Cisco IOS Release 12.1 T and are updates to the Cisco IOS documentation set. A feature module consists of a brief overview of the feature, benefits, configuration tasks, and a command reference. As updates, the feature modules are available online only. Feature module information is incorporated in the next printing of the Cisco IOS documentation set.

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: **Cisco IOS Release 12.1**: **New Feature Documentation**

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: **Cisco IOS Release 12.1**: **New Feature Documentation**

Cisco IOS Software Documentation Set

The Cisco IOS software documentation set consists of the Cisco IOS configuration guides, Cisco IOS command references, and several other supporting documents that are shipped with your order in electronic form on the Documentation CD-ROM—unless you specifically ordered the printed versions.

Documentation Modules

Each module in the Cisco IOS documentation set consists of two books: a configuration guide and a corresponding command reference. Chapters in a configuration guide describe protocols, configuration tasks, Cisco IOS software functionality, and contain comprehensive configuration examples. Chapters in a command reference provide complete command syntax information. Use each configuration guide with its corresponding command reference.

On Cisco.com and the Documentation CD-ROM, two master hot-linked documents provide information for the Cisco IOS software documentation set.

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Configuration Guides and Command References

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Configuration Guides and Command References

Cisco IOS Release 12.1 Documentation Set

Table 4 describes the contents of the Cisco IOS Release 12.1 software documentation set, which is available in electronic form and in printed form ordered.

> **Note** You can find the most current Cisco IOS documentation on Cisco.com and the Documentation CD-ROM. These electronic documents may contain updates and modifications made after the hard-copy documents were printed.

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1

Table 4   Cisco IOS Software Release 12.1 Documentation Set

Books	Major Topics
• *Cisco IOS Configuration Fundamentals Configuration Guide* • *Cisco IOS Configuration Fundamentals Command Reference*	Cisco IOS User Interfaces Cisco IOS File Management Cisco IOS System Management
• *Cisco IOS Bridging and IBM Networking Configuration Guide* • *Cisco IOS Bridging and IBM Networking Command Reference, Volume I* • *Cisco IOS Bridging and IBM Networking Command Reference, Volume II*	Using Cisco IOS Software Overview of SNA Internetworking Bridging IBM Networking

Table 4   Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Major Topics
• *Cisco IOS Dial Services Configuration Guide: Terminal Services* • *Cisco IOS Dial Services Configuration Guide: Network Services* • *Cisco IOS Dial Services Command Reference*	Preparing for Dial Access Modem Configuration and Management ISDN and Signalling Configuration PPP Configuration Dial-on-Demand Routing Configuration Dial-Backup Configuration Terminal Service Configuration Large-Scale Dial Solutions Cost-Control Solutions Virtual Private Networks X.25 on ISDN Solutions Telco Solutions Dial-Related Addressing Services Interworking Dial Access Scenarios
• *Cisco IOS Interface Configuration Guide* • *Cisco IOS Interface Command Reference*	Interface Configuration Overview Configuring LAN Interfaces Configuring Serial Interfaces Configuring Logical Interfaces
• *Cisco IOS IP and IP Routing Configuration Guide* • *Cisco IOS IP and IP Routing Command Reference*	IP Addressing and Services IP Routing Protocols IP Multicast
• *Cisco IOS AppleTalk and Novell IPX Configuration Guide* • *Cisco IOS AppleTalk and Novell IPX Command Reference*	AppleTalk and Novell IPX Overview Configuring AppleTalk Configuring Novell IPX
• *Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Configuration Guide* • *Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Command Reference*	Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Overview Configuring Apollo Domain Configuring Banyan VINES Configuring DECnet Configuring ISO CLNS Configuring XNS
• *Cisco IOS Multiservice Applications Configuration Guide* • *Cisco IOS Multiservice Applications Command Reference*	Multiservice Applications Overview Voice Video Broadband
• *Cisco IOS Quality of Service Solutions Configuration Guide* • *Cisco IOS Quality of Service Solutions Command Reference*	Quality of Service Overview Classification Congestion Management Congestion Avoidance Policing and Shaping Signalling Link Efficiency Mechanisms Quality of Service Solutions

Table 4   Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Major Topics
• *Cisco IOS Security Configuration Guide* • *Cisco IOS Security Command Reference*	Security Overview Authentication, Authorization, and Accounting (AAA) Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Other Security Features
• *Cisco IOS Switching Services Configuration Guide* • *Cisco IOS Switching Services Command Reference*	Cisco IOS Switching Services Overview Cisco IOS Switching Paths Cisco Express Forwarding NetFlow Switching MPLS Switching Multilayer Switching Multicast Distributed Switching Virtual LANs LAN Emulation
• *Cisco IOS Wide-Area Networking Configuration Guide* • *Cisco IOS Wide-Area Networking Command Reference*	Wide-Area Networking Overview Configuring ATM Configuring Frame Relay Configuring Frame Relay-ATM Interworking Configuring SMDS Configuring X.25 and LAPB
• *New Features in 12.1-Based Limited Lifetime Releases* • *New Features in Release 12.1 T* • Release Notes (Release note and caveat documentation for 12.1-based releases and various platforms) • *Cisco IOS Debug Command Reference* • *Cisco IOS Dial Services Quick Configuration Guide*	

Note *Cisco Management Information Base (MIB) User Quick Reference* is no longer published. If you have an account with Cisco.com, you can find the current list of MIBs supported by Cisco. To reach the *Cisco Network Management Toolkit,* go to CC, press **Login**, and click to **Software Center: Network Mgmt Products: Cisco Network Management Toolkit: Cisco MIB**.

Obtaining Documentation

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at http://www.cisco.com, http://www-china.cisco.com, or http://www-europe.cisco.com.

Documentation CD-ROM

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Kanji (Japanese)	japan-tac@cisco.com
Hangul (Korean)	korea-tac@cisco.com
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In North America, TAC can be reached at 800 553-2447 or 408 526-7209. For other telephone numbers and TAC e-mail addresses worldwide, consult the following web site: http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml.

Software Configuration Tips on the Cisco Technical Assistance Center Home Page

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This URL is subject to change without notice. If it changes, point your Web browser to Cisco.com, press **Login**, and click on this path: **Technical Assistance Center: Technical Tips.**

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- Access Dial Cookbook—Contains common configurations or recipes for configuring various access routes and dial technologies.

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- Frequently Asked Questions—Describes the most frequently asked technical questions about Cisco hardware and software.

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- Internetworking Features—Lists tips on using Cisco IOS software features and services.

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